

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
PART I	
1.1 INTRODUCTION	1
1.2 DATA COLLECTION	5
1.3 MODEL STAGES	6
1.4 REVIEW OF CONCEPTUAL MODEL	9
1.5 PREPARATION OF THE STEADY-STATE MODEL	18
1.6 STATUS OF STEADY-STATE MODEL	54
1.7 FUTURE MODIFICATIONS TO STEADY-STATE MODEL	67
1.8 RECOMMENDATIONS FOR FUTURE MODELING	68
1.9 SUMMARY	70
1.10 REFERENCES	73
PART II	
2.1 INTRODUCTION	75
2.2 CALIBRATION OF STEADY-STATE MODEL	78
2.3 MODIFICATIONS OF STEADY-STATE MODEL	80
2.4 PREPARATION OF TRANSIENT-STATE MODEL	85
2.5 CALIBRATION OF TRANSIENT-STATE MODEL	106
2.6 MODIFICATIONS OF TRANSIENT-STATE MODEL	113
2.7 APPLICATION OF TRANSIENT-STATE MODEL	120
2.8 SUMMARY	121
2.9 REFERENCES	125

TABLE OF CONTENTS (Cont'd.)

TABLES

Table 1	Thicknesses and Leakance Values for Middle Confining Clay Unit
Table 2	Streamflow Data for the San Bernardino Area (1982)
Table 3	Well Information and the Respective Screened Aquifers
Table 4	Transmissivities Calculated From Specific-Capacity & Pump Test Data
Table 5	Well Pumpage (Average for 1982-1986)
Table 6	Input and Output Filenames
Table 7	Summary of Calibration Runs for Steady-State Model
Table 8	Summary of Additional Calibration Runs for Steady-State Model
Table 9	Streamflow Data for the San Bernardino Area (1986-1989)
Table 10	Well Pumpage for Last Quarter of 1990 (October, November, December)
Table 11	Summary of Transient-State Calibration Runs
Table 12	Hydraulic Conductivities Used in Transient-State Flow Model
Table 13	Calibrated Leakance Values for Middle Confining Clay Unit Used in Transient State Flow Model

FIGURES

Figure 1	Base Map for the Newmark Wellfield Study Area (plate)*
Figure 2	Active Modeling Area for the Newmark Wellfield Study Area (plate)*
Figure 3	Thickness of Alluvium (Modified from Hardt & Hutchinson, 1980) (plate)*
Figure 4	Bedrock Elevations (plate)*
Figure 5	Cross-Section Location Map
Figure 6a	Conceptualized Cross-Section A-A'
Figure 6b	Conceptualized Cross-Section C-C'
Figure 7	Structure Map of Top Elevation for Confining Middle Clay Unit (plate)*
Figure 8	Structure Map of Base Elevation for Confining Middle Clay Unit (plate)*
Figure 9	Boundary Conditions for the Upper & Lower Aquifers (plate)*
Figure 10	Stream Gage Locations (Source: Hardt & Freckleton, 1987)
Figure 11	January 1982 Water Elevations for Upper Aquifer (Source: Hardt & Freckleton, 1987) (plate)*
Figure 12	January 1982 Water Elevations for Lower Aquifer (Source: Hardt & Freckleton, 1987) (plate)*
Figure 13	Hydraulic Conductivities (K) for the Upper Aquifer (Layer 1) & Transmissivities (T) for the Lower Aquifer (Layer 2) (plate)*
Figure 14	Location of Water-Supply and Monitoring Wells (plate)*

* plates are located at end of this appendix

TABLE OF CONTENTS (Cont'd.)

Figure 15	Revised Thickness of Alluvium (plate)*
Figure 16	Revised Bedrock Elevations (plate)*
Figure 17	Revised Structure Map of Base Elevation for Confining Middle Clay Unit (plate)*
Figure 18	Revised Boundary Conditions for Upper and Lower Aquifers (plate)*
Figure 19	Hydraulic Conductivities (K) for Upper (Layer 1) and Lower (Layer 2) Aquifers (plate)*
Figure 20	January 1986 Water Elevations for Upper Aquifer Estimated by Steady-State Flow Model (plate)*
Figure 21	January 1986 Water Elevations for Lower Aquifer Estimated by Steady-State Flow Model (plate)*
Figure 22	Revised Location of Water-Supply and Monitoring Wells (plate)*
Figure 23	December 1990 Water Elevations for Upper Aquifer Estimated by Transient-State Model (plate)*
Figure 24	December 1990 Water Elevations for Lower Aquifer Estimated by Transient-State Model (plate)*
Figure 25	Hydrographs for Newmark #3 and Waterman Avenue Wells
Figure 26	Hydrographs for 31st and Mountain View and 23rd St. Wells
Figure 27	Hydrographs for Perris Hill #2 and 17th St. Wells
Figure 28	Hydrographs for Gilbert St. and 7th St. Wells

ATTACHMENTS

A	List of Input and Output Filenames for the Steady-State Model
B	List of Input and Output Filenames for the Transient-State Model
C	Input and Output Files for Calibrated Transient-State Model (Run 25B0511)

* plates are located at end of this appendix